

DIOSPYROS TORRESII (EBENACEAE): A NEW BLACK ZAPOTE FROM TROPICAL MEXICO

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ABSTRACT

A new species of black zapote from tropical Mexico is described, and photos of the holotype are provided. *Diospyros torresii* M.C. Provance & A.C. Sanders is based on collections from two localities in north and central Oaxaca. This species appears to belong to a group of closely related American *Diospyros* with fruits that are dark-colored and sweet at maturity.

KEY WORDS: black zapote, *Diospyros torresii*, Ebenaceae, Mexican persimmons, systematics, taxonomy, Tehuacán-Cuicatlán Valley, zapote negro

RESUMEN

Se describe una nueva especie del México tropical y se presentan fotos del holotipo. La descripción de *Diospyros torresii* M.C. Provance & A.C. Sanders se basa en colecciones de dos localidades en el norte y centro de Oaxaca. Se cree que esta especie pertenece a un grupo cercanamente relacionado de *Diospyros* de América que tienen frutos de color oscuro y que son dulces cuando maduran.

A monograph of the Mexican *Diospyros* (Ebenaceae) is the current focus of studies by the first author of this paper. During the course of reviewing thousands of collections of American *Diospyros*, it has become clear that there are several undescribed taxa in Mexico. This paper describes one such species based on collections from Oaxaca, Mexico, that do not belong to any currently recognized species. A comprehensive key to the Mexican species of *Diospyros* has not been published since that by P.C. Standley (1924). Such a key and classification will soon be published by the first author in connection with his current work on the genus in Mexico. The new species described here is best considered a member of what we informally recognize as the *Diospyros rosei* Complex.

The flowering sepals of this complex tend to have vermiform glandular hairs at their apices. The sepals of female flowers tend to be strongly accrescent and are 5–8 in number. The species of this group produce medium size fleshy fruits that are dark-colored and sweet at maturity, and may contain from 10 to 16 ovules. In addition to the species described here, this group includes: *Diospyros rosei* Standl., *Diospyros palmeri* Eastw., *Diospyros californica* I.M. Johnst., *Diospyros oaxacana* Standl., *Diospyros sonorae* Standl., *Diospyros texana* Scheele, *Diospyros riojae* Gomez-Pompa, *Diospyros konzattii* Standl., *Diospyros rekoii*

Standl., and *Diospyros xolocotzii* Madrigal & Rzed. Some South American species may belong to this group as well. However, sufficient material from that continent was not available for investigation. We have evaluated the holotype of *D. morenoi* A. Pool, a species recently described from Nicaragua (Pool 1997). In our opinion, this material is consistent with *D. rekoii*, a species for which we have seen material from Mexico and El Salvador.

SPECIES DESCRIPTION

Diospyros torresii M.C. Provance & A.C. Sanders, sp. nov. (**Fig. 1**). TYPE: MEXICO. OAXACA: Mpio. Santiago Texcalcingo: 11 km al E de Teotitlán del Camino carr. a Huautla de Jiménez, [approx. 18° 11'N, 97° 02'W], 1710 m, 17 Mar 1985, R. Torres C. & M.A. Martínez 6636 (HOLOTYPE: MO; ISOTYPE: CHAPA).

Frutices vel arbores 4 m alta; laminae lanceolatae vel ovatae, petioli decurrentes; petala ovalia vel quadrata, ac manifeste introrsa secus marginem dextrum adaxialium; calyces 5–7 partiti; sepala florentia dense minuta clavata glandulosa adaxialiter; fructus ellipsoidei, atropurpurei ubi desiccati.

Shrubs or trees 4 m tall, probably facultatively deciduous; **old stems** often pulverulent, rarely smooth, dark reddish-brown to dark gray; **current years stems** with stiff, erect, reddish hairs densely covering surface, occasionally retrorse, some slightly wavy, densely appressed at the shoot apex; **lenticels** common, filling tissue yellowish to off-white; **bud scales** convex, ovate, densely appressed reddish hairy; **petioles** 2–4 mm long, both sides densely erect white hairy, sometimes clavate glandular hairy, convex below, \pm flat and minutely V-grooved above, distal half minutely winged along the margin, sometimes winged the entire length; **mature leaves** entire, alternate, chartaceous, lanceolate to ovate, 3–6 cm long including the petiole, 2–3 cm wide, blade abruptly decurrent on the petiole, mostly grayish in herbarium material, base rounded, obtuse or acute, margin revolute, apex obtusely rounded, sometimes acutely rounded, below sparsely to moderately erect white hairy, hairs sometimes slightly wavy, sometimes clavate glandular hairy, minutely papillate, usually minutely black gland-dotted, above irregularly wavy to \pm rugose, glabrate to minutely erect white hairy, sparsely and minutely papillate, sometimes sparsely clavate glandular hairy; **laminar extrafloral nectaries** abaxial, minute, roundish, mostly raised, probably green in living material; **venation** \pm brochidodromous; **midrib** prominent below, sub-terete, densely to very densely erect white to reddish hairy, above flush or barely raised, rarely slightly impressed, yellowish, sparsely to densely erect hairy, less hairy distally, often becoming glabrate, often clavate glandular hairy near the petiole; **2° venation** 5–7 major lateral veins on each side of midrib, below raised, above flush with surface or barely raised, very obscure; **3° venation** reticulated below raised or not, visible or not, above impressed, often obscure, sometimes not visible; **new leaves** strigillose below, especially along the midrib, clavate glandular hairy, above minutely hairy, the hairs mostly erect, sometimes appressed, clavate glandular hairy; **female flowers** solitary on young

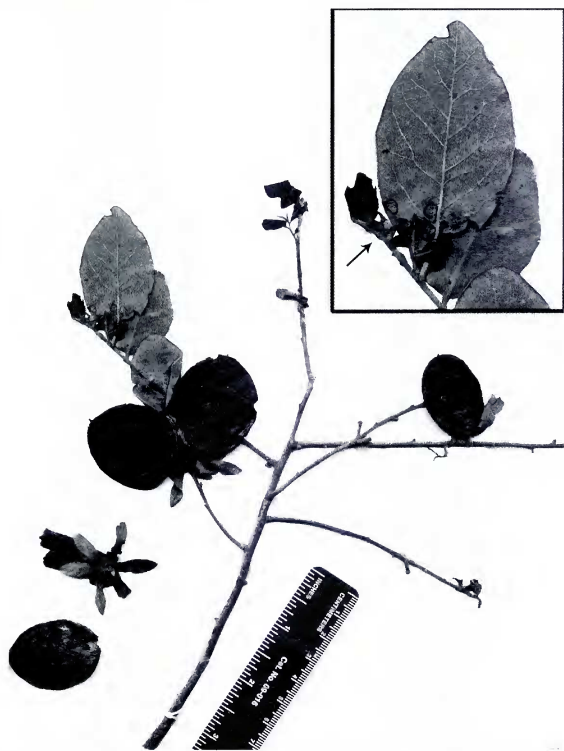


FIG. 1. *Diospyros torresii* M.C. Provance & A.C. Sanders. Holotype, R. Torres C. & M. A. Martínez 6636 (MO) with detail of leaf (inset) and female flower (indicated by the arrow).

stems; **flowering pedicels** 2 mm long; **pedicel bracts** 2, sub-opposite, 4–7 mm long, 0.75 mm wide, linear, densely minute erect hairy, densely clavate glandular hairy; **fruiting pedicels** 5–10 mm long, ± 1.5 mm wide, somewhat stout, densely but minutely erect hairy, apex hat-shaped; **calyx** 5–7-merous, sinuses rounded, acute; **calyx tube** cupulate, exterior sparsely to moderately minutely appressed hairy; **flowering sepals** 5–6 mm long, ± 2 mm wide, sparsely hairy, the hairs containing a reddish-brown compound, exterior moderately to sparsely appressed hairy, sparsely and minutely clavate glandular hairy, apically dark glandular vermiform hairy, interior densely but minutely clavate glandular hairy, with low to moderate numbers of simple hairs, especially towards base; **fruiting sepals** accrescent in fruit, 16–17 mm long, 5–6 mm wide, thick, \pm spreading, lance-ovate to elliptic, apices acutely-rounded, venation obscure, minutely hairy on both sides, sparser towards the apex, minutely black gland-dotted on both sides; **female corolla** 3 mm long; **corolla tube** 1.25 mm long, 2.0–2.5 mm wide, exterior densely appressed hairy, interior glabrous; **lobes** 5, ± 1.75 mm long, oval to quadrate, exterior densely appressed hairy, inside glabrous, involute, more so on the right margin than the left; **ovary** globose, smooth, sparsely minute hairy; **styles** 5, one third of length of ovary, connate, becoming distinct distally; **stigmas** 5, short, labiate; **staminodes** none seen; **male flowers** unknown; **fruit** a berry, ellipsoid, ± 4 cm long, 3 cm wide; **mesocarp** fibrous, orange in herbarium material; **exocarp** ± 2 mm thick, hypodermis moderately thick, sclerified, epidermis minutely blistered, glabrous, atropurpureous in dried material.

Distribution and Ecology.—To our knowledge, *Diospyros torresii* has so far only been collected in the state of Oaxaca, Mexico, however, the type was collected within ca. 2 km of the Puebla state line, and we believe that it probably occurs in that state also. The type collection was made in oak woodlands of the Sierra Mazateca west of Huautla. The condition of the material from the Sierra Mazateca leads us to believe that *D. torresii* is facultatively deciduous. Both sheets of Torres 6636 demonstrate ripe fruit, new female flowers and relatively few mature leaves, but there are a number of young shoots with very young leaves. The paratype was collected from the Tlacolula Valley, but unfortunately is without specific ecological data.

Etymology.—This species is named in honor of Rafael Torres Colín, an authority on *Bauhinia* (Fabaceae) and Oaxacan floristics, and also the collector of the type.

PARATYPE. **MEXICO.** **Oaxaca:** Mpio. Villa Díaz Ordaz: Barranca of Díaz Ordaz, NW of Mitla, 1700 m, 11 Feb 1966, M. & A. Kirkby 2739 (NA)

DISCUSSION

Diospyros torresii is currently known from two localities in Oaxaca. The material used to describe this new species was previously identified as *D. palmeri*

Eastwood (R. *Torres C.* & R. *Cedillo T.* 6636) or *D. aequoris* Standley (M. & A. Kirkby 2739). Morphologically it most resembles *Diospyros oaxacana* Standley, *Diospyros riojae* Gomez-Pompa and *Diospyros conzattii* Standley. It can easily be distinguished from these species provided fertile material is available. In fact, even though identification of sterile *Diospyros* material is sometimes difficult, in the case of *D. torresii* sterile material should not pose a major problem. The paratype is sterile but we are confident that this material represents the new species. Vegetative features that distinguish *D. torresii* from *D. conzattii* include its smaller, usually thicker leaves and shorter petioles. In addition, the lamina of *D. torresii* is abruptly decurrent on the petiole, and decurrent for a shorter distance than in *D. conzattii*, whereas the leaves of *D. conzattii* are typically tapered basally and often decurrent on the petiole for nearly the entire length. The leaves and petioles of *D. oaxacana* are velutinous to densely pilose, often on both sides, while in *D. torresii* they are glabrous or have only sparse, minute, erect hairs. Furthermore, the leaves of *D. oaxacana* tend to be oval to obovate versus the lanceolate to ovate leaves of *D. torresii*. The leaves of *D. riojae* tend to be larger than those of the new species, but more importantly, the 2° and 3° veins as viewed from the adaxial surface of the leaves are raised and contrast sharply with the lamina. In *D. torresii* the 2° and 3° veins are scarcely visible adaxially.

An interesting detail concerning the type locality is that it is only about 20 km from Coxcatlán, Puebla, and other archaeological sites that have yielded evidence of early agriculture in Mexico (e.g. Smith 1965; Eubanks 2001). Most close relatives of *D. torresii* are known to produce fruits that are edible or even highly desirable. *Diospyros oaxacana* has been recorded as a useful plant in the Tehuacán-Cuicatlán Valley (Casas et al. 2001), and *D. conzattii* has been recorded as a useful plant in Chinantec-speaking communities of the Oaxacan highlands in the District of Cuicatlán (Lipp 1971). Given the large size of the ripe fruits, their probable edibility, and the nearness of this species to some of the oldest agricultural sites in the New World, it may be worthwhile to reevaluate the identification of putative *Diospyros digyna* seeds associated with nearby archaeological sites (e.g. Smith 1965; Callen 1965). Similarly, herbarium vouchers, if they exist, associated with ethnobotanical reports of *Diospyros* usage by nearby indigenous populations (Lipp 1971) should also be reviewed.

Few specimens of this new taxon are known to us, and although this makes it tempting to recommend formal protection for *D. torresii*, we first recommend focused collecting in Oaxaca before such action is taken.

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